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ABSTRACT

Malnutrition can be defined as a lack of a sufficient quantity or quality of nutrients to maintain the body system at some definable level of functioning. It has been estimated that nearly half the children in the world today grow and develop under conditions of protein or protein-calorie malnutrition sufficient to impair their physical development. In the United States this level of malnutrition is rare. The major problem in the United States is probably that of hunger, defined as a psychological variable. It seems probable that the social and psychological causes and consequences of malnutrition and hunger are themselves conceptually independent. In this paper some of the factors involved in the relationship between malnutrition, learning, and behavior are critically reviewed. Most of the data are drawn from studies conducted in the developing countries of the world, where the conditions of malnutrition are significantly different from those in the United States. Therefore attention is given to some speculations about the impact of hunger on learning and behavior in this country. The review of the impact of malnutrition on learning and behavior concentrates on methodological and conceptual problems of studies reported in the literature. These problems make it impossible to assess the impact of malnutrition, as a separate entity, on human behavior. Malnutrition is socially regulated, and not random, either in the social system as a whole, or in segments of the social system, be they sub-classes or families. The conditions which lead to malnutrition are also conditions which affect the intellectual, social, and cognitive development of the child. (Author/JM)

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MALNUTRITION, LEARNING, AND BEHAVIOR

by

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Malnutrition can be defined as a lack of a sufficient quantity or quality of nutrients to maintain the body system at some definable level of functioning. It has been estimated that nearly half the children in the world today grow and develop under conditions of protein or protein-calorie malnutrition sufficient to impair their physical development. In the United States this level of malnutrition is rare. The major problem in the United States is probably that of hunger, defined as a psychological variable. It seems probable that the social and psychological causes and consequences of malnutrition and hunger are themselves conceptually independent. In this paper I will first critically review some of the factors involved in the relationship between malnutrition, learning, and behavior. Because most of the data are drawn from studies conducted in the developing countries of the world and because the conditions of malnutrition which are found in these countries are significantly different from the United States, I shall then turn my attention to some speculations about the impact of hunger on learning and behavior in this country.

My review of the impact of malnutrition on learning and behavior will concentrate on methodological and conceptual problems of studies reported in the literature. These problems, in my view, make it

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impossible to assess the impact of malnutrition, as a separate entity, on human behavior.

Malnutrition, then, can be defined in purely physiological terms: as the relationship of nutrient intake to bodily needs. I shall pass over lightly the problem of measurement of nutritional status with the comment that I know of no satisfactory measure which enables us to compare the current nutritional status of one individual with that of another. As far as I know, we cannot measure input or utilization with enough sensitivity to say that one individual is X percent better nourished than another. Thus, relatively gross differences in nutritional status are generally used in human studies.

Granted, however, that it is possible to differentiate groups or individuals on the basis of their nutritional status, it is clear that there are well defined physiological consequences of malnutrition. These include retardation in physical development, reduced adult stature, and high susceptibility to infectious disease. Malnourished individuals are apathetic, and lethargic or irritable. These are all factors which, whatever their cause, have important consequences for social and psychological development. All of them can be influenced by factors other than nutritional status. Thus, for example, Landauer and Whiting (1964) have demonstrated that ritualized physical stress, such as circumcision during infancy can increase adult stature independently of any other known factor. Nonetheless, there does seem to be a relatively clear cause and effect relationship between nutritional status and the known physical outcomes.

It is much more difficult to relate a nutritional input-output paradigm to the intellectual or behavioral correlates of malnutrition in infants or children. This is because malnutrition is socially ordered and distributed. Except in rare circumstances, malnutrition occurs in families at the lower end of the socio-economic scale, and often to some, but not all children in the family. To know that a child is malnourished is to be able to predict with a great deal of confidence that his parents are poor, uneducated, unskilled, and quite possibly inept. In all probability, the malnourished child either has, or will have, a large number of siblings. It also appears possible that even within families, some children are better nourished than others. It may be that under some circumstances, the family picks the child to be worst nourished, in much the same way that families will pick one of their members to be mentally ill. (Vogel and Bell, 1960)

In other words, malnutrition is socially regulated, and not random, either in the social system as a whole, or in segments of the social system, be they sub-classes or families. The conditions which lead to malnutrition are also conditions which effect the intellectual, social, and cognitive development of the child. There are two consequences of this relationship which are important for an understanding of the effects of malnutrition. First, a full understanding of the relationship requires an intensive look at the micro environment of the child and his family, at the interpersonal interactions which transpire between him and

others. Second, any study which relies on behavioral or intellectual differences between naturally occurring groups in the society will have its results confounded by the relationship of nutrition to the social system.

Parenthetically, in an important review of the animal literature, Levitsky and Barnes (1970) raise similar questions about the confounding of relationships in experimental animal studies of nutrition and learning by the consequences of the conditions under which the animals were raised. They point out that the previously malnourished animal may have a lower level of motivation, and increased emotionality, or place a different value on the reinforcement, as a consequence of the conditions used to establish the malnutrition. Thus, many of the animal studies which seem to support the hypothesis that malnutrition impairs learning are also confounded by social factors.

With these reservations, I will turn to a review of some of the reported findings in humans.

Consequences of malnutrition during infancy

There is considerable support for the finding that severe malnutrition during infancy--that is, during the period of postnatal life when the brain is growing rapidly--leads to neurological deficits that are not reversible once some critical stage of development has been passed. Monckeberg's (1968, 1969) studies support the idea that the brain of the severely malnourished child is smaller than that of the normal child,

and that the reduction in brain size is greater than the reduction in head circumference which accompanies malnutrition. Using a process of cerebral illumination, Monckeberg shows that a strong light placed on the skull of a severely malnourished child will radiate further, thus, illuminating a greater portion of it, than the same light placed on the skull of a normally nourished child of the same age. His studies also indicate that an area between the brain and the skull is filled with a fluid similar to spinal fluid. Support for this position is given by Winick and his associates (1968, 1969) who demonstrate that if malnutrition occurs during the period of cell division in the brain the resulting brain will contain fewer than normal cell numbers. If the malnutrition occurs after the end of cell division, but still during the period of cell growth, the brain will then contain approximately normal numbers of cells, but the cells will be smaller than the cells of the adequately nourished brain. Chase and his associates (1970, 1971) have shown that early malnutrition leads to an apparently irreversible impairment of mental ability if intervention does not occur early enough. Working with a small group of children hospitalized for severe malnutrition during their first year of life, they report that on follow up "no child admitted to the hospital in the first four months of life had a mean developmental quotient below 80 when three and one-half year old. In contrast, only one child admitted after age four months with malnutrition had a developmental quotient above 80 at three and one-half years."

Presumably, age at onset, age at rehabilitation, and duration of malnutrition effect the ultimate outcome.

These findings do not, however, indicate that the common assumption that smaller head size is prima facie evidence of intellectual deficit is correct. While smaller head circumference is one of the correlates of malnutrition, the assumption that the malnourished individual must therefore be less intellectually capable ignores the fact that all body dimensions are smaller, and the head is likely to be proportionate to body size. Ramos-Galvan, et al (1968) working in Mexico, do not find enduring intellectual impairment among children who are at the lower end of the developmental norms when the malnutrition has occurred at weaning or beyond. And it was John Gordon who once pointed out that on the average, women have smaller heads than men, but no man among us would say they are less intelligent.

Severe malnutrition during childhood

Even when the child is hospitalized for kwashiokor or marasmus after the first few months of life there is evidence that he suffers intellectual impairment later on. In none of these instances is the length of malnutrition known with any degree of certainty. Chase and Martin (1970), Cravioto and Robales (1965), and Monckeberg (1968) all present data which indicate that verbal performance lags even further behind normal than does psychomotor or social development in these infants.

Yarrow (1964) reports that:

> Marked developmental retardation is commonly found...most common is language retardation...Although motor functions seem to be less vulnerable than other areas of development, deviant motor patterns suggestive of neurological abnormalities have been noted...those skills which seem to be primarily dependent on the maturation of the neuromuscular apparatus develop normally, whereas retardation is found in those functions which are dependent on environmental stimulation.... (there is) a diminished impulse to reach out toward people and objects and an impairment in the capacity to modulate motor impulses to produce smooth motor movements. Emotional responses tend to be limited and stereotyped in...infants. (p. 100)

This quotation is from Yarrow's review of institutionalized infants in general and is not specific for infants hospitalized for malnutrition. Yet, the parallels between the reported capacities and behaviors of the malnourished and the institutionalized infant are so striking that there is a real possibility that some of the developmental lags reported for the malnourished child are the consequence of the rehabilitation experience and not of the malnutrition itself. Certainly, there is reason for concern that average metabolic ward may be deficient in perceptual stimulation, in sensorimotor experience, in mothering, and in the provision of a single mother substitute for the severely malnourished infant or child. Hence, it seems probable that the infant hospitalized for malnutrition does not receive the level of interpersonal attention, face-to-face verbal communication, or perceptual stimuli which appear to be a requisite for adequate intellectual and cognitive development. (Kagan, 1970) This is both because it is not offered and because the

apathy resulting from malnutrition makes the child unable to perceive or attend to it. In addition, the level of apathy of these children makes it probable that they will neither initiate nor respond to interpersonal approaches in ways that will reward the caretaker. Thus, the lack of reinforcement received by the caretaker from the infant will tend to reduce her interest in interpersonal interaction with the child. Perhaps, greater attention to the child and less attention to his malnutrition would result in significant increases in his ultimate capacity. In fact, a report by Saltin et al (1971) indicates that when an infant hospitalized for marasmus is provided with a stimulus rich environment and a warm nurse-child relationship, his performance on a developmental test will tend to be significantly better than that of a child who does not receive this extra stimulation although medical care and diet for the two are equivalent. In this study the difference between the two groups disappeared when they were followed up a year after discharge. However, if they were returned to the same environment from which they came, this is not surprising.

Effects of milder malnutrition

Virtually every study ever conducted with human subjects has supported the hypothesis that malnutrition is associated with either a lag or a deficit in intellectual development. I do not believe that any of them have demonstrated a clear cause-effect relationship, and few have

paid attention to the processes through which malnutrition would have this effect, if indeed, it does. Both Cravioto's study (1966, 1968) correlating lags in intra-sensory integration with malnutrition as measured by height, and Stotch and Smythe's (1967, 1968) results, in which previously severely malnourished children are shown to be deficient in a variety of intellectual functions, are confounded by the use of groups with natural differences in nutritional status. Stotch and Smythe's malnourished sample came from families with a high degree of gross social pathology. Cravioto reports that for his sample, the only difference between the shorter and taller children was in the educational status of the mother. However, it is not clear that he looked for the more subtle within status differences which appear to be related to nutritional status in other work. Monckeberg, (1968) reporting a variety of intellectual differences between a well and a malnourished group, does find differences in medical care, environmental motivation, and intelligence of the mothers of the mal and well nourished children.

In an important study still underway, the McKays and their associates (1970) show that adequate nutrition alone is not sufficient to provide adequate intellectual or social development. In this series of studies, malnourished children beginning at about age three are placed in one of the three treatment groups. All groups are provided medical care, and an adequate diet. One group is placed in an environment which provides high cognitive stimulation. In the second group, a program of physical

activity is provided, while the third group is provided care similar to that which they would receive at home, or is provided food supplementation at home. Depending on the study, three control groups are used: a) siblings of the treated group, who are raised under conditions of marginal nutrition; b) better nourished children from the same lower class area of the community, c) upper class children from the same community.

After a period of four months, all the treated children achieved nutritional normality, and were showing catch up growth. The low stimulus group, that is, the group raised under conditions similar to those they would have received at home, show no difference in their scores on a variety of cognitive and intellectual tasks when compared with the marginally nourished control group. The physically stimulated and the cognitively stimulated groups both showed improvement on tests relating to conceptual relationships, and the cognitively stimulated group improved significantly more than any other group on their ability to learn specific intellectual tasks of a verbal nature. It is interesting to note that none of the groups showed an improvement on the Knox Cubes test, "suggesting that the undernourished child's retardation of short term memory is especially resistant to treatment." The children in the program of cognitive stimulation did achieve better test results than their non-malnourished peers in the community, but both groups achieve less than the upper status group in the same community. When, in another study,

the normally nourished lower status children were provided a program of stimulation, their achievement was higher than the stimulated, rehabilitated group. In terms of changes in social behavior, the socially stimulated groups show an increase in security, and all the nourished children showed an increase in activity.

In another study, Klein and his associates (1969) examined the performance of children rehabilitated from kwashiorkor in a community program. The control group for this study consisted of non-malnourished children of the same age as the experimental group, whose siblings had been participants in the rehabilitation program, thus providing adequate control of the micro social environment. Two separate samples were studied. A wide battery of tests of cognitive and intellectual functions were used each time. In the first study, the malnourished performed less well than the well nourished on measures involving memory for sentences and digits, and on tests of incidental and intentional learning. These are tests in which the stimulus is available for only a short period of time, or where speed of response is an important criteria. These results supported the interpretation that previously malnourished children have some deficit in speed of information processing. In the second study, better controls were applied, and it seems possible that the nutritional difference between the experimental and control group was less. New tests were added to the battery. The tests that showed differences in the first study did not significantly discriminate the well and malnourished children in the second study. In the second study, the previously malnourished children did score

significantly lower on the Knox Cubes tests, on tests of embedded figures, and on memory for design. Reanalysis of the data from both studies indicated that the experimental group performed less well on difficult items in the tests, and on items where high attentionality and sustained motivation are required. Klein and his associates feel that these results are consistent with the interpretation that malnourished children do not develop the set to invest sustained attentional involvement in difficult cognitive tasks, and have a lowered performance motivation.

It is interesting to note that both Sulzer, et al (1970), working with Headstart children in New Orleans, and Beller and Howell (1971), working with preschool children in Philadelphia, come to essentially the same conclusions about the effect of iron deficiency anemia as Klein does about the effects of protein-calorie malnutrition. Problems of attentionality and performance motivation seem to be common consequences of nutritional deficiency, and nutritional rehabilitation alone does not seem to be sufficient to improve performance. In fact, the failure of the McKays to demonstrate improvement in their nutritionally rehabilitated but cognitively unstimulated group can be used to raise the question as to whether the performance deficits shown to be correlated with nutritional deficiency are a consequence of the malnutrition or of the situation in which nutrition is but one of a series of problems. The behavior of the malnourished child shows many similarities to the behavior

of unstimulated or deprived children, just as the behavior of the infant hospitalized for gross life threatening malnutrition shows many parallels to the behavior of any institutionalized child.

Does, then, nutrition make a difference? I think it does, and that the effects of malnutrition are exacerbated by the deleterious familial and social environments in which malnourished children are raised. My explanation of the consequences of malnutrition starts with a rather obvious and simple minded explanation: the malnourished child is apathetic and has a low level of energy, and as a consequence is relatively unresponsive to social and perceptual stimuli. This starts him on a deviant socialization track, involving self and other definitions of him as inept.

The work of Kagan (1970), Bruner, and others has shown that the availability of differentiated perceptual stimuli early in life is an important component of later intellectual and cognitive development. I don't think it makes much difference whether the stimulation is not available in the environment, or, because of lowered energy level and lowered responsiveness, the stimulation is not attended to. The negative effect on cognitive and intellectual development should be the same.

At the same time, the malnourished child will be less responsive to interpersonal interactions, and this lack of response will diminish the total interaction he experiences. Infants and children develop in interpersonal situations; they initiate interaction as much as they

respond to it. It seems likely that the malnourished child will initiate fewer interactions, and that his general lack of responsiveness will result in fewer initiations by others. Interaction is important because of the stimulation and the learning opportunities which are presented for the child, and because the child can develop a sense of self only in interaction with others.

We can know ourselves only as others respond to us. (Cooley, 1909, 1922) To the extent that the malnourished child is less able than others, he will be defined by them, and consequently define himself, as inept. The feedback to the child may be intentional, or it may be a more subtle consequence of the way in which others in the environment define him. In any event, by the time he moves out of the family into the wider world, his ineptness is apt to be characteristic. In other words, if he does not have the opportunity to learn those things which his society expects children of his age to know, if his interaction has been such as to lead to the development of a negative self image, if frequent episodes of infectious disease or other illness have removed him too often from learning settings and opportunities, then he will be less able than his well nourished age mates. Furthermore, he will know it, and so define himself. This, in turn, will lead to a lowered level of aspiration, since experience has taught him that he will not succeed.

There is also accumulating evidence to show that, even within the lower class segments of society in which malnutrition is most common,

there are important differences in the families of children who are or are not malnourished. The resources of the families with malnourished children are less, and family members are less competent. Resource differences which may appear inconsequential to us have a significant impact on life chances at the lowest end of the social scale. For example, in the study by the McKays, (1970) none of their lower class non-malnourished control children came from families with incomes as low as those of the families of the malnourished children. Klein and his associates (unpublished report) have found differences in housing quality--for example, whether there is a separate cooking area--related to verbal intelligence in children in rural Guatemalan villages. In urban areas in Latin America, malnutrition is often found in areas of the city which are essentially ports of first call for migrants from rural areas--but the malnutrition is not necessarily related to length of time in the area. The more able move on to other areas; the less able remain and their children are malnourished.

This is not dissimilar from Coleman's (1966) findings on the effects of the family on school performance in the United States. Children's school performance is significantly effected by the support or lack of support for academic achievement which is provided by the family. Part of this support is verbal; but a significant portion of it may stem from the family's behavior. If, for example, members of the family never read, and show by their behavior discomfort with intellectual tasks, it

is unlikely that the child will value academic achievement. Whiteman and Deutsch (1968) have shown that verbal intelligence within lower social class groups in New York is related to within family differences. One of the most interesting of these differences is whether or not there is dinner time conversation, which provides both verbal practice and communicates a message about the importance of verbal activity to the child.

As far as I know, studies concerned with the relationship between nutrition, intelligence, and behavior are just beginning to look at these subtle, within-class, within-family variables. I think that it is in this area that we will finally find some significant untangling of the relationships.

Most of the studies I have quoted have been conducted in Latin America, or other developing countries, where malnutrition is endemic. While there are some areas of significant malnutrition in the United States, malnutrition does not have the characteristic of an endemic disease. Marasmus and kwashiorkor are extremely rare in the United States, and it seems likely that they are associated with some gross family pathology, in ways that they are not in the developing countries. Children do not die from lack of food in the United States; however, they are hungry, and to me, hunger is probably the most significant expression of nutritional problems in the country.

When I speak of hunger, I am using the term in a special way. Hunger is the existence within the lifespace of the individual of a

driving force for more, or different, nutrients. (Kallen and Howell, 1970) Thus, I am not referring to the physiological signals emitted by the body when its protein supply or blood sugar level is low, or in response to stomach motility. Rather, I am referring to hunger as a continuous psychological state. To be meaningful, hunger must be experienced as a subjective state. Furthermore, it must be learned. While hunger and malnutrition often coexist, they are conceptually independent. It is possible to be hungry without being malnourished, or to be malnourished without being hungry.

Let me give an example of what I mean. In the study being conducted by Klein and his associates in Guatemala, an experimental high protein food supplementation program was instituted in a small, relatively isolated rural village in which malnutrition was endemic. The supplement was made available to everyone in the village, but special efforts were made to get it to pregnant women, lactating mothers, infants and preschool children. It was prepared and consumed in a central supplementation center, rather than being provided to the families in their homes. Because it was regarded as a supplement rather than a substitute for the regular diet, it was provided mid-morning and mid-afternoon five days a week. During the first few weeks of the program, participation was relatively good. Within a few weeks, however, the village demanded that the supplement be provided seven days a week, because, on the weekends, the children were becoming fussy, complaining,

and generally showing negative behaviors. It seems to me that these children had learned to be hungry. Up to the institution of the supplementation program, they had been satisfied with their normal, insufficient diet. They were unaware of the possibility of a significant alteration in their food intake. The supplement both changed the balance of their intake, and, at some level, changed their expectations, and quite possibly, their awareness of the potential for change. In any event, when the food supplement was not available on weekends, they were aware of the lack. In other words, they had learned to be hungry.

Hunger as a social and psychological condition has not been well studied in the United States and my remarks at this point are highly speculative. It seems to me that the consequences of hunger may be just as damaging as the consequences of malnutrition, particularly in a society in which obesity is regarded as one of the most significant problems of public health. I suspect that many of the mechanisms which appear to lead to a lowered level of aspiration and to lowered performance motivation among the malnourished lead to the same consequences among the hungry. There are a number of lines of reasoning for this conclusion.

Even if nutrition, per se, is adequate, hunger is consuming of psychic energy. This is particularly true when there is a good deal of variation in the regularity of the pattern and content of food intake. The child who must come to school without breakfast and does not know whether or not he will have dinner that night not only starts the day with

less energy, but is likely to use a good deal of that energy worrying about whether or not he will eat. His attention is thus diverted from significant learning tasks, and his performance suffers.

Hungry children will, in all probability, see themselves as relatively deprived. By this, I mean that they will see themselves as receiving less than their fair share of those things which society values. (Shils, 1950) The mass media constantly provide them with images of what life should be like, what people should eat, and they see that others receive things that they do not have. Since hunger is mostly reserved for the poor, it becomes another illustration of their unvalued place in the society. If they are unfairly denied, one response will be to change the definition of fairness, to accept the social definition that they are denied because they are unworthy. This likelihood is increased by the fact that hunger, being socially defined, involves social definitions of the hungry. "The Hungry" has become a polite synonym for the poor, and we live in a society in which to be poor is to be stigmatized.

Not only is the stigmatization of the hungry a reflection of our value system, but also a reflection of the programs intended to feed hungry children. One of the best examples I know occurred last year, when the Lansing Model Cities program suggested a pilot school lunch program in an elementary school which contained a number of lower class as well as middle class children. The Model Cities Agency offered to provide the funds for this program. The community response was negative.

A number of comments said, essentially, "no, save the money for educationally relevant programs." I cannot conceive of a more educationally relevant program than the provision of school lunches. As the term was used in this instance, however, it meant "programs that will benefit the middle class students in the school, since the lower class children are uneducable and not worth the effort." It should be remembered that the original purpose of the school lunch program, and of the surplus commodity program, was the utilization of surplus farm commodities which were too expensive to store. The food stamp program, which is also a type of commodity distribution program, is still administered by the Department of Agriculture, which is concerned more with farm income than with quality of life.

The operations of these programs confirm the stigma which is attached to being poor. Thus, the application process for food stamps involves a means test and is operated at the whim of local officials, who often require what Elaine Cumming has referred to as the rite of self-degradation before the food stamps are provided. Stores have large signs welcoming food stamp users; when they reach the checkout counter, the sign reads: Identify yourself as a food stamp user: i.e., admit in public that you are poor--and separate the permissable from the non-permissable items. Now, this may be necessary if federal regulations concerning what is and is not allowable are to be followed; but the consequence must have a negative impact on the user. School lunch programs involve a means test,

with standards set by the Federal Government, but implementation is up to the local school district. While the federal regulations prohibit discrimination in form or substance against those who receive a free or low cost school lunch, they also require a strict cost-accounting which makes it necessary for the school to keep day to day records on the number of free or low cost lunches provided. This is generally done by some sort of public identification of the child receiving the low cost lunch--a different line, a different colored ticket, and so on. In other words, he must be publically identified, at least within the school, as receiving governmental charity.

This public stigmatization has at least two consequences for the performance of the child. In the first place, since the connotation of charity involves the assumption of unworthiness, the child is apt to receive feedback from teachers and peers that he is less worthy. If this is combined with poor school performance which is a consequence of lack of regular nutritional intake and anxiety about food, he will incorporate this negative definition of himself and his ability into his self concept.

The second anticipated consequence will also have a negative impact on his school performance. It stems from the public identification of the child as poor, or unworthy, and the stigma which is attached to the label. It is operated through teacher's expectancies. Rosenthal and Jacobsen (1968), have shown that teachers expectancies regarding a child's

performance have a definable impact on that performance. This impact is greater at the lower age levels, and seems to be the consequence of differential responses by the teacher. When the child is defined as one to be stigmatized, it seems probable that teachers responses to him will not be such as to encourage his performance.

It is more difficult to speculate about the effects of hunger on the development of preschool aged children, although, as preschool programs and day care centers are developed, one possibility is that the mechanisms of stigmatization will simply influence the child earlier in his life. It may also have an impact on the mother-child relationship, both from the point of the mothers concerns about her own abilities to raise her child adequately, and from its impact on the development of a sense of competence, efficacy, and security in the child. Mary Ainsworth (1967) has shown that the ability of a mother to respond adequately and sensitively to the feeding demands of infants under the age of three months is related to the infants sense of security at the age of 12 months. She relates this to the precursors of the development of a sense of efficacy and competence; in other words, if the child early learns that there is security, and that he can influence the way in which one of his central needs is fulfilled, he is apt to develop a sense of competence. But if the food is not regularly available, particularly as the child grows and is able to identify his needs more clearly for himself and for significant others in his social environment,

hunger is apt to lead to lack of competence and the lack of a sense of efficacy.

Thus, the psychological and social consequences of hunger appear to be similar in many ways to those of malnutrition. We are, in this country, paying a great deal of attention to world-wide problems of malnutrition. We are paying virtually no attention to problems of hunger in the United States. Our interest in malnutrition has stemmed from scientific, political, and moral concerns. I suggest that the problem of hunger in the United States is equally interesting scientifically, equally politically relevant, and certainly as important morally.

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